

Docket No.: 052363-0031

PATENT**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of : Customer Number: 20277  
: :  
Katsuo KAZAHAYA, et al. : Confirmation No. 7544  
: :  
Application No.: 10/566,633 : Group Art Unit: 1794  
: :  
Filed: January 31, 2006 : Examiner: Miller, Daniel H.  
: :  
For: DIAMOND COATED TOOL AND METHOD OF MANUFACTURING THE SAME

**DECLARATION UNDER 37 C.F.R. § 1.132**

OK TO ENTER

Mail Stop RCE  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Considered

Sir:

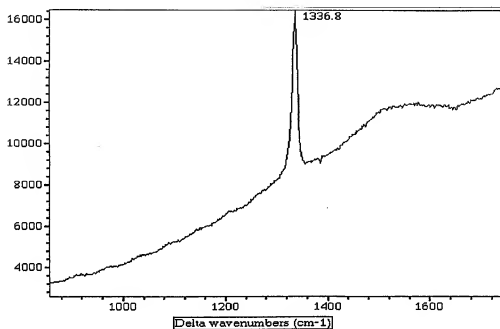
I, Katsuo Kazahaya, hereby declare and say as follows: /Daniel Miller/ 07/01/2009

1. I am the first named inventor of the above captioned application.
2. My *Curriculum Vitae* is attached.
3. I am a person having ordinary skill in this art as evidenced by my *Curriculum Vitae*.
4. I have read and am familiar with the disclosure and presently pending claims of the above-captioned application, as well as issues raised in the final Office Action mailed by the U.S. Patent & Trademark Office on December 23, 2008, as well the Advisory Action dated April 3, 2009.
5. The structure of the diamond coating of Phillips reference can be restated simply as "a single crystal structure." The following experimental evidence, conducted under my

direction and under my supervision, demonstrates that Phillips' diamond coating has a single crystal structure, whereas diamond coating of the present application has a "double crystal structure". The result of Raman spectroscopic analysis most obviously shows a difference between the crystal structure of the diamond coating of the present application and that of the Phillips reference. The result of Raman spectroscopic analysis on the diamond coating of the present application shows a local peak in the vicinity of  $1100\sim1150\text{ cm}^{-1}$ . See FIGS. 9 and 10 of the present specification. This peak is one of the physical values specifying the "double crystal structure." By contrast, the result of Raman spectroscopic analysis on the diamond coating of Phillips does not show data in the vicinity of  $1100\sim1150\text{ cm}^{-1}$ . See FIG. 5 of Phillips. This is probably due to the fact that a distinctive peak does not exist in the vicinity.

6. The significance of the Raman spectroscopic analysis is now explained. At my direction and under my supervision, the followings test was conducted which demonstrates that a difference of crystal structure is reflected in a result of Raman spectroscopic analysis. Since Phillips does not teach a producing condition in detail, a diamond coating is formed under a condition adjusted so as to obtain a result which is similar to the result shown in FIG. 5 of Phillips. FIG. 1, reproduced on the following page, is a graph showing a result of Raman spectroscopic analysis of a diamond coating obtained in the test. FIG. 2, also reproduced on the following page, is a SEM photograph showing a cross-sectional surface of the same diamond coating.

**FIG. 1**



**FIG. 2**



7. Referring to FIG. 1 above, while there is a peak in the vicinity of  $1330\text{ cm}^{-1}$ , a local peak does not appear in the vicinity of  $1100\text{--}1150\text{ cm}^{-1}$ , unlike FIGS. 9 and 10 of the present application. This experimental result indicates that the diamond coating produced in the test has a crystal structure similar to that described in the Phillips patent.

8. Turning attention to FIG. 2 above, the SEM photograph has a scale of nanometer order, that is, FIG. 2 shows an enlarged equivalent of diamond grains of the diamond coating shown in FIG. 4 (micrometer order) of Phillips. Moreover, FIG. 2 (above) has the same scale as FIG. 7 of the present application (a SEM photograph showing diamond fine grains of the present subject matter). Therefore, by observing FIG. 2 (above) and FIG. 7 of the present application, a comparison of the crystal structure can be made between the diamond coating of Phillips and that of the present claimed subject matter. In fact, the differences are readily apparent when these two figures are compared. More importantly, it is clear that the diamond coatings of Phillips and the present application are totally different in terms of their crystal structure.

9. The undersigned hereby declares that all statements made herein based upon knowledge are true, and that all statements made based upon information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

April 29, 2009

Date

Katsuo Kazahaya

Katsuo Kazahaya

## 職 務 経 歴 書

1. 氏 名 : 風早 克夫
2. 生年月日 : 1972年4月17日
3. 入社年月日 : 1997年4月 1日
4. 住 所 : 兵庫県三田市高次2-1-41三田レジデンスヒル204号
5. 学 歴 : 1997年3月 龍谷大学大学院理工学研究科卒業
6. 職 歴 : 1997年4月 大阪ダイヤモンド工業株式会社入社  
(現 株式会社アライドマテリアル入社)  
1997年9月～1999年7月 CVD開発室勤務  
1999年7月～ 現在 工具研究部CVD開発グループ勤務
7. 業務内容 : 上記の間、主としてCVDダイヤモンド被覆工具の研究・開発に従事

上記の通り証明いたします。

2009年5月8日  
東京都港区芝1-11-11  
株式会社アライドマテリアル  
専務取締役 島岡 宏行



Curriculum Vitae

1. Name: Katsuo Kazahaya
2. Date of birth: April 17, 1972
3. Date of joining a company: April 1, 1997
4. Address: 204 Sanda Residence-Hill, 1-41, Takasugi 2-chome, Sanda-shi, Hyogo
5. Education: March 1997, Graduated from Graduate School of Science and Technology,  
Ryukoku University
6. Work Experience:  
April 1997, Joined Osaka Diamond Industrial Co., Ltd. (a predecessor company of  
A. L. M. T. Corp.)  
September 1997 - July 1999, Worked in CVD Development Department  
July 1999 - Present, Worked in CVD Development Group in Tool Research Department  
Division
7. Work contents: Mainly engaged in a research and development of CVD diamond coated  
cutting tools during the periods noted above.

This is to certify the above.

May 8, 2009  
11-11, Shiba 1-chome, Minato-ku, Tokyo  
A. L. M. T. Corp.  
Senior Managing Director Hiroyuki Shimaoka